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20 March 1974

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APPENDIX B

SOURCES

The sources providing information for estimating the amounts used in construction and the price weights for the three building materials are noted below.

Cement

1. Chien-chu Ts'ai-liao Kung-yeh, #5, Peking, 7 March 1964, p. 2.
2. China News Service, Canton, 6 February 1965, and 22 February 1965.
3. Foreign Broadcast Information Service, People's Republic of China, ccc-2, 31 December 1964; b-10, 3 January 1972; b-1, 1 December 1972; b-12, 27 December 1973.
4. Jen-min Jih-pao, Peking, 3 May 1964, p. 1; 29 November 1971, p. 4.
5. U.S. Congress, Joint Economic Committee, People's Republic of China: An Economic Assessment, Washington, D.C., 1972.
6. New China News Agency, various releases.
7. Peking Review, #2, 11 January 1974, p. 23.
8. BBC, Summary of World Broadcasts, FE/W707/A/13, 17 January 1973; FE/W241/B/28, 4 December 1963.
9. Survey of China Mainland Press, #2191, 1 February 1960, p. 8.
10. Ten Great Years: Statistics of the Economic and Cultural Achievements of the People's Republic of China, Peking, Foreign Languages Press, 1960.

Timber

In addition to the sources above, the following were used:

1. Chao, Kang. The Construction Industry in Communist China, Aldine Publishing Co., Chicago, 1968.
2. Chi-hua Ching-chi (Planned Economy), #11, 1957, p. 22.
3. Richardson, S.D., Forestry in Communist China, Johns Hopkins University Press, Baltimore, 1966.

Steel

In addition to the sources for cement and timber, the following were used:

1. Foreign Broadcast Information Service, Far East, BBB-6, 20 October 1959.
2. Jen-min Jih-pao, Peking, 12 February 1962, p. 4.
3. Chi-hua Ching-chi (Planned Economy), #9, 1957, p. 13.
4. Yeh-chin Pao, #48, Peking, 4 December 1959, p. 37.
5. Wo-kuo Ti-i-ke Wu-nien-chi-hua-shih-chi Ti Sheng-tsan Ho Hsiao-fei Kuan-hsi, State Statistical Bureau, Peking, 1959, p. 69.

Price Weights

Except for the compendium of Shanghai prices published in 1958*, only fragmentary information on prices in China is available. The scattered references, often to individual products with inadequate specifications, have been gathered from a wide variety of newspapers, journals, and other sources. Most of the individual prices used in this paper are for the year 1957 and are, for the most part, ex-factory or wholesale prices. These price data have been weighted by estimates of the amounts used in construction, by types and grades, of each of the three building materials in order to derive the respective price weights.

* Academia Sinica, Shanghai Economic Research Institute and Shanghai Academy of Social Science, Economic Research Institute. Shang-hai Chieh-fang Chien-hou Wu-chieh Tzu-liao Hui-pien 1921-1957 (A Compilation of Reference Materials of Shanghai Commodity Prices Before and After Liberation), Shanghai: Shanghai Jen-min Ch'u-pan-she, October 1958.

18 APR 1974

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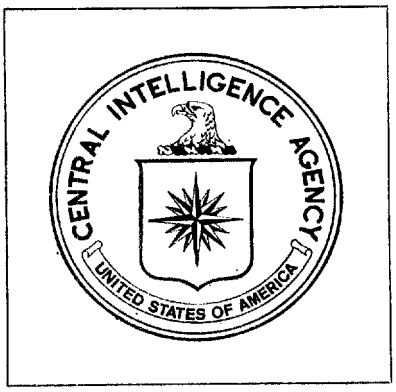

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An Index of Construction Activity in China

A (ER) 74-9
March 1974

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An Index of Construction Activity in China

A (ER) 74-9
March 1974

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AN INDEX OF CONSTRUCTION ACTIVITY IN CHINA

Introduction

An index of construction activity should employ estimates of either all outputs of the construction sector or all inputs to the construction sector (building materials, labor, and transportation) to be comprehensive. In the case of the PRC, gaps and deficiencies in the available data do not permit either of these two types of indexes. However, an index of the major building material inputs can be calculated from the information available on the Chinese economy. The resulting index is believed to represent correctly the general trends in activity of the organized construction sector.

Definition of Construction

The term construction as used in this publication refers to activity that results in additions to productive capacity under the economic plans of major political entities. Rural construction, which is not included in the index, is construction undertaken and funded by smaller units in the countryside, primarily communes, production brigades, production teams, and households. Rural construction sometimes uses labor assigned on a regularized basis from the production teams; the laborers receive credit in the form of work points that are the basis of the year-end distribution of the collective's income. In other cases, unpaid "volunteer" labor is extracted from the members of the economic unit involved. Rural construction consists mainly of repair and construction of farm buildings, small-scale irrigation and water conservancy works, and small industrial facilities of various types. Households are especially important in contributing to the building, expansion, and maintenance of dwelling units, normally on an afterhours basis with the use of local materials. Funds accumulated for rural construction activity are small on a project-by-project accounting but large in the aggregate.

Organization of the Construction Industry

The responsibility for construction in the PRC is diffused among numerous governmental organizations. The lines of authority cross regional and functional boundaries, and there is much overlapping of responsibility. Reorganizations of the control structure have occurred at the highest level. The State Capital Construction Commission was abolished in 1961 and merged with the State Planning Commission. In 1965 a second reorganization took place when the construction commission was reestablished and the Ministry of Construction was divided into the Ministry of Construction and the Ministry of Construction Materials. In 1971-72 the two were again combined as the Ministry of Construction to enhance coordination between construction planning and material supplies availability.

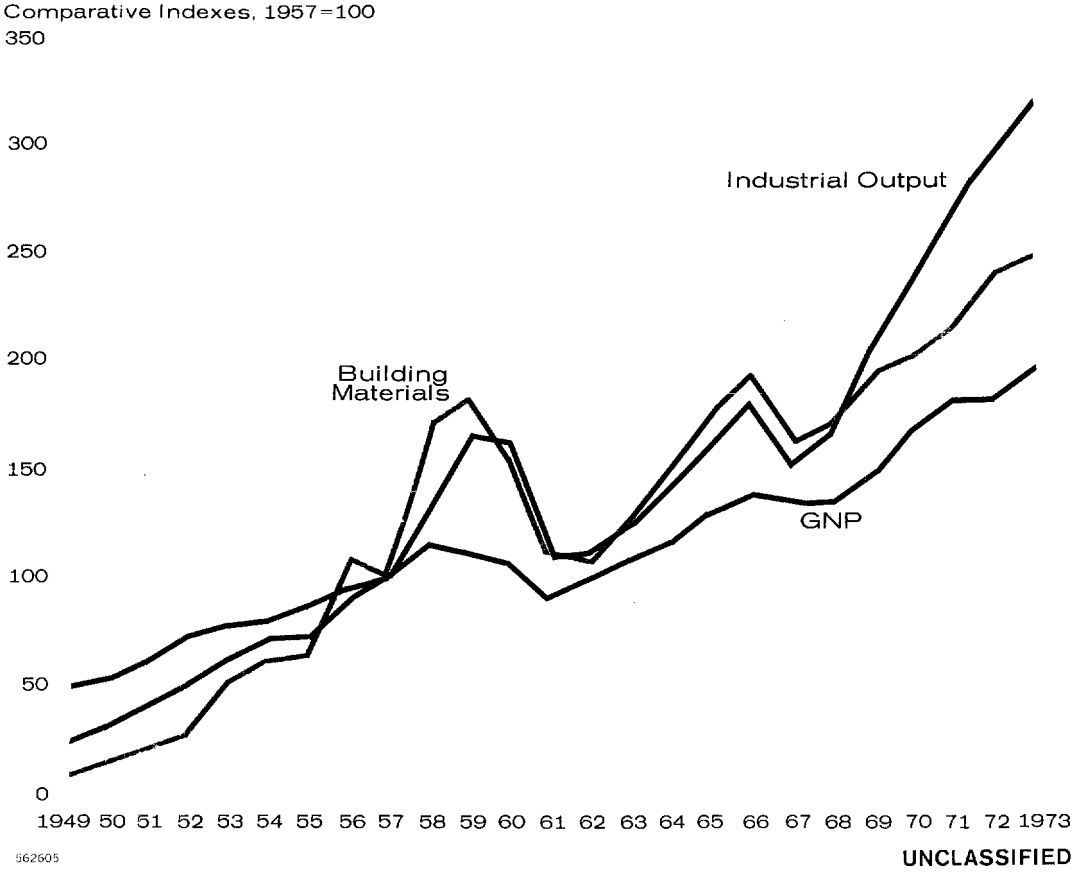
The actual construction of large, modern industrial plants is performed by the construction and design bureaus of the various industrial ministries. Provincial construction bureaus handle smaller projects. Railroad engineering divisions of the People's Liberation Army construct portions of China's expanding rail network, while other sections are the responsibility of civilian engineering bureaus.

Trends in Construction and Other Economic Aggregates

The index in this publication is a weighted index of the three major material inputs (cement, timber, and steel) used in construction in 1949-73. (For a chronology of construction activity, see Appendix A.) A major problem is to determine what proportions of total supplies are assigned to the construction sector. Relative weights, another problem, are handled by the use of 1957 Chinese internal prices as weights. The use of 1957 prices implies that the commodity mix of grades of cement, quality of timber, and types of steel is constant for all years. A further assumption is that changes in inventories of these building materials are negligible. These assumptions, although perhaps distorting the index for certain individual years, probably have little effect on the long-term trends indicated by the index.

The trend in construction closely resembles the trend in industrial output (see the chart). Construction increased when industry boomed, and it declined when hard times hit the economy. During the 16 years 1958-73, construction has grown at an average annual rate of almost 6%. This rate is slightly lower than the rate of growth of industrial output. From 1949 through 1957, construction increased at a higher rate than industrial output.

Indexes of GNP, Industrial Output and Construction in China



In a developing country, construction typically grows faster than GNP. This trend holds true for China. Economic reverses, attributable to the Great Leap Forward (1958-60) and the Cultural Revolution (1966-69), depressed all indexes. Construction and industrial output were more volatile than GNP; both fell further than GNP in bad times and grew faster in good times.

Methodology Used in Estimating the Building Materials Index of Construction Activity

The following methodological statement discusses the estimates of the physical volume of the building materials used in construction, the price weights, and the full index of building materials. A final section compares the building materials index for 1950-58 with an independent index of construction inputs for that period and discusses the effect on the building materials index of including data on glass and bricks. (For a discussion of sources, see Appendix B.)

Physical Volume of Building Materials

Cement

Estimates of cement production of both the modern sector and the small plant sector are given in Table 1. The Chinese have recently stated that 70%-80% of small plant cement is "used for agricultural needs." On the basis of this claim, 75% of small plant production is assumed to have been supplied to rural construction for each year, 1957-73. A time series for cement exports—which go principally to Hong Kong—was compiled from a variety of sources. Cement exports and cement supplied to rural construction were deducted from total cement production to derive a time series of cement supplied to the construction sector. Cement cannot be stored easily for long periods and is generally used in the vicinity of

Table 1

China: Estimated Cement Supplied to Construction

	Production					Used in Construction	
	Total[1]	Modern Plants	Small Plants	Used in Rural Construction[2]	Exports	Volume[3]	Index (1957=100)
	Million Metric Tons						
1949	0.7	0.7	....	....	....	0.7	11
1950	1.4	1.4	....	....	....	1.4	24
1951	2.5	2.5	....	....	....	2.5	43
1952	2.9	2.9	....	....	....	2.9	49
1953	3.9	3.9	....	....	0.3	3.6	62
1954	4.6	4.6	....	....	0.3	4.3	74
1955	4.5	4.5	....	....	0.4	4.1	71
1956	6.4	6.4	....	....	0.8	5.6	96
1957	7.9	6.9	1.0	0.8	1.3	5.8	100
1958	10.7	9.3	1.4	1.0	0.9	8.8	151
1959	12.3	10.6	1.7	1.3	0.8	10.2	175
1960	12.0	9.0	3.0	2.2	0.8	9.0	154
1961	7.9	6.0	1.9	1.4	1.0	5.5	94
1962	7.1	5.6	1.5	1.1	1.1	4.9	84
1963	9.4	6.9	2.4	1.8	0.9	6.6	114
1964	11.2	9.0	2.2	1.7	0.7	8.9	152
1965	15.2	11.2	4.0	3.0	1.0	11.2	194
1966	17.4	12.9	4.5	3.4	1.0	13.1	225
1967	14.6	11.0	3.7	2.7	0.5	11.4	196
1968	15.5	11.3	4.2	3.1	0.3	12.1	208
1969	19.1	13.0	6.1	4.5	0.3	14.2	245
1970	19.7	13.3	6.4	4.8	0.3	14.6	252
1971	23.0	13.8	9.2	6.9	0.6	15.5	267
1972	28.4	14.8	13.6	10.2	0.7	17.5	301
1973	30.8	15.4	15.4	11.6	1.0	18.3	314

1. Because of rounding, components may not add to the totals shown.
2. Constituting 75% of small plant production. Derived from unrounded data.
3. Total production of cement minus cement used in rural construction and cement exports.

manufacture owing to its low value-to-weight ratio. Thus the timelag between production and use of cement is small for most years.

Timber

The time series for timber production is presented in Table 2.[1] Timber imports from the USSR were added to

1. For a discussion of these estimates, see Robert Michael Field, "Chinese Industrial Development: 1949-70," *People's Republic of China: An Economic Assessment*, Joint Economic Committee, US Government Printing Office, May 1972, p. 83.

Table 2

China: Estimated Timber Supplied to Construction

	Production	Imports	Total Supply[1]	Used in Construction: Volume[2]	Used in Construction: Index (1957=100)
	Million Cubic Meters				
1949	5.8	....	5.8	1.7	16
1950	6.6	....	6.6	2.0	19
1951	7.6	....	7.6	2.3	22
1952	11.2	....	11.2	3.4	32
1953	17.5	....	17.5	6.2	58
1954	22.2	....	22.2	7.0	66
1955	20.9	....	20.9	7.2	67
1956	20.8	....	20.8	11.4	107
1957	27.9	....	27.9	10.6	100
1958	35.0	....	35.0	20.6	193
1959	41.2	....	41.2	20.6	193
1960	33.0	....	33.0	16.5	155
1961	27.0	0.1	27.1	13.6	127
1962	29.0	0.2	29.2	14.6	137
1963	32.0	0.5	32.5	16.2	152
1964	34.0	0.5	34.5	17.2	162
1965	36.0	1.5	37.5	18.8	176
1966	38.0	1.5	39.5	19.7	185
1967	30.0	0.1	30.1	15.0	141
1968	32.0	....	32.0	16.0	150
1969	35.4	....	35.4	17.7	166
1970	40.0	....	40.0	20.0	188
1971	43.0	....	43.0	21.5	202
1972	46.4	....	46.4	23.2	218
1973	50.0	....	50.0	25.0	235

1. Because of rounding, components may not add to the totals shown.
2. Constituting 50% of total supply of timber for 1959-73; calculated at the rate of 77,000 cubic meters per 100 million yuan of investment in capital construction for 1949-58.

production to derive estimates of total supplies of timber each year. Other imports and exports of timber have been negligible. Construction in the 1960s received about one-half of the timber supply, according to the figures supplied by Kang Chao[2] and S.D. Richardson.[3] Thus the estimates of timber used in construction each year, 1959-73, were derived as 50% of the total supply.

2. Kang Chao, *The Construction Industry in Communist China*, Aldine Publishing Co., Chicago, 1968, p. 202.

3. S.D. Richardson, *Forestry in Communist China*, Johns Hopkins University Press, Baltimore, 1966, p. 164.

Finished Steel

Estimates of production of finished steel are given in Table 3. Net imports were added to domestic production to derive estimates of the total supply of finished steel each year. The amount of steel used in construction in 1949-58 was calculated from statements in the Chinese press. For the years after 1958, information of this type is not available. Some relatively stable relationship presumably exists between the quantities of cement and steel

Table 3

China: Estimated Finished Steel Supplied to Construction

	Production				Used in Construction		Finished Steel Used in Construction as a Percent of Total Supply
	Crude Steel	Finished Steel[1]	Net Imports	Total Supply[2]	Volume[3]	Index (1957=100)	
	Million Metric Tons						
1949	0.16	0.12	....	0.12	0.06	3	46
1950	0.6	0.4	0.6	1.0	0.1	7	12
1951	0.9	0.7	0.6	1.3	0.2	14	19
1952	1.3	1.1	0.5	1.6	0.3	18	19
1953	1.8	1.5	0.9	2.4	0.8	44	32
1954	2.2	1.7	0.6	2.4	0.9	53	39
1955	2.8	2.2	0.8	3.0	1.1	61	35
1956	4.5	3.2	0.6	3.8	2.0	116	53
1957	5.4	4.0	0.4	4.4	1.7	100	59
1958	8.0	6.0	1.5	7.5	2.6	151	35
1959	10.0	7.5	0.6	8.1	3.1	175	38
1960	13.0	10.0	0.7	10.7	2.6	151	25
1961	8.0	6.0	0.1	6.1	1.6	91	26
1962	8.0	6.0	....	6.0	1.4	79	23
1963	9.0	7.0	0.2	7.2	1.9	107	26
1964	10.0	7.5	0.4	7.9	2.4	140	31
1965	11.0	8.0	0.6	8.6	3.0	174	35
1966	13.0	10.0	1.3	11.3	3.5	199	31
1967	10.0	7.5	1.6	9.1	3.0	170	33
1968	12.0	9.0	1.7	10.7	3.1	177	29
1969	15.0	11.0	1.7	12.6	3.6	204	28
1970	18.0	13.0	2.2	15.2	3.6	206	24
1971	21.0	15.8	2.1	17.8	3.7	213	21
1972	23.0	17.2	2.1	19.3	4.1	235	21
1973	25.0	18.8	2.5	21.3	4.2	241	20

1. For 1949-58 these data were derived from Chinese sources; for 1959-73, finished steel production was estimated as being about three-quarters of crude steel production.
2. Because of rounding, components may not add to the totals shown.
3. Calculated for 1949-58 from Chinese statements; calculated for 1959-73 on the basis of an estimated steel/cement ratio as explained in the text.

used in construction. The ratio of steel to cement used in construction, 1950-58, is presented in Table 4. The results for 1950-58 were used as a guide in estimating ratios for the remaining years of the series.

Table 4

China: Ratio of Steel to Cement Used in Construction

	Million Metric Tons		
	Steel	Cement	Ratio[1]
1950	0.1	1.4	0.09
1951	0.2	2.5	0.10
1952	0.3	2.9	0.11
1953	0.8	3.6	0.22
1954	0.9	4.3	0.21
1955	1.1	4.1	0.26
1956	2.0	5.6	0.36
1957	1.7	5.8	0.30
1958	2.6	8.8	0.30

1. Derived from unrounded data.

The relationship between steel and cement used in construction was a generally increasing one to 1956 and dropped off somewhat in 1957-58. The ratio of 0.30 for 1957-58 is quite high, compared with the ratio for other nations--the USSR: 0.19 in 1969-70; the United States: 0.14 for the 1950s and the 1960s; and Japan: 0.09 in 1970-71. The ratio in China was high because of the predominance of steel-intensive construction such as heavy industrial buildings and railroad lines.

In estimating the amount of steel used in construction since 1959, we have arbitrarily assumed that the steel-to-cement ratio has declined at the rate of 0.005 points per year on the basis of changes in the direction of the construction effort and the experience in other countries--the steel-cement ratio of the USSR declined from about 0.30 in 1955 to 0.19 in 1969-70. The amount of steel used in construction is then calculated from these ratios by using the estimates of cement used in construction in Table 1.[4]

4. Alternative assumptions about the rate of decline in the steel-to-cement ratio would yield lower or higher estimates of steel used in construction, depending on whether the rate of decline was higher or lower than 0.005 points per year. However, the rate of decline would have to vary considerably from 0.005 points per year to yield substantially different results in the final index. For example, the use of the 0.005 figure gives an index of 248 for 1973 (with a 1957 base), whereas the use of a 0.01 figure would have given an index of 236 and the assumption of an unchanging steel-cement ratio would have given an index of 279. For the lower estimate the steel-to-cement ratio was not allowed to decline below 0.20.

As indicated in Table 3, this methodology indicates that the share of total steel supplies used in construction has tended to drop over the years since 1956-57. Such a trend is reasonable because the residual steel supplies have been used primarily by the machine building industry. Chinese claims, as well as estimates by foreign observers, indicate that the machine building industry has been expanding much faster than both construction and industrial production as a whole. See, for example, *Peking Review*, 2 November 1973, p. 22; Field, *op. cit.*, pp. 67-68, 80; and Thomas G. Rawski, "Recent Trends in the Chinese Economy," *China Quarterly*, no. 53, January-March 1973, p. 10.

Price Weights

The price weights used for the three commodities follow:

Cement: 70 yuan per metric ton.

Timber: 122 yuan per cubic meter.

Finished steel: 682 yuan per metric ton.

The Building Materials Index of Construction Activity

The building materials index of construction activity is given in Table 5. The amounts of each building material used in construction were multiplied by their respective prices to derive a value figure for each commodity. These value figures were added together to derive the total value of the three commodities for each year. An index was then calculated by setting the value in 1957 equal to 100.

Comparison with Kang Chao's Index of Construction

The index for this publication is tested against an index by Professor Kang Chao of the University of California. Kang Chao presents an index of inputs to the construction sector covering 1950-58. He uses official Chinese data on steel, timber, cement, glass plates, other building materials, and labor. This index, converted to 1957=100 from its 1952 base, is given in Table 6. The two indexes show the same general pattern.

Table 5

China: The Building Materials Index of Construction Activity

	Cement		Timber		Finished Steel		Total Value	Building Materials
	Million Metric Tons	Million Yuan[1]	Million Cubic Meters	Million Yuan[1]	Million Metric Tons	Million Yuan[1]	Million Yuan[2]	Index 1957=100
1949	0.7	46	1.7	211	0.1	38	295	10
1950	1.4	99	2.0	243	0.1	82	423	15
1951	2.5	174	2.3	280	0.2	170	624	22
1952	2.9	200	3.4	410	0.3	215	825	28
1953	3.6	250	6.2	752	0.8	527	1,528	53
1954	4.3	301	7.0	852	0.9	627	1,780	61
1955	4.1	287	7.2	874	1.1	730	1,891	65
1956	5.6	392	11.4	1,390	2.0	1,374	3,155	109
1957	5.8	407	10.6	1,299	1.7	1,189	2,895	100
1958	8.8	612	20.6	2,508	2.6	1,790	4,911	170
1959	10.2	713	20.6	2,513	3.1	2,083	5,309	183
1960	9.0	626	16.5	2,014	2.6	1,800	4,441	153
1961	5.5	383	13.6	1,655	1.6	1,081	3,118	108
1962	4.9	340	14.6	1,783	1.4	945	3,067	106
1963	6.6	464	16.2	1,980	1.9	1,266	3,711	128
1964	8.9	620	17.2	2,103	2.4	1,660	4,383	151
1965	11.2	787	18.8	2,288	3.0	2,070	5,145	178
1966	13.1	915	19.7	2,406	3.5	2,361	5,682	196
1967	11.4	798	15.0	1,834	3.0	2,022	4,655	161
1968	12.1	845	16.0	1,952	3.1	2,099	4,895	169
1969	14.2	995	17.7	2,159	3.6	2,424	5,578	193
1970	14.6	1,024	20.0	2,440	3.6	2,444	5,907	204
1971	15.5	1,084	21.5	2,623	3.7	2,535	6,242	216
1972	17.5	1,223	23.2	2,830	4.1	2,799	6,852	237
1973	18.3	1,278	25.0	3,050	4.2	2,864	7,193	248

1. Derived from unrounded data.
2. Because of rounding, components may not add to the totals shown.

Other Building Materials: Glass and Brick

No time series are available on such inputs to construction as plywood, pre-cast concrete, and plastics. Data on glass and brick production from 1949 through 1960, however, are available. A new index was calculated including all five materials (cement, timber, steel, glass, and brick). This expanded index differs little from the original index (see Table 7). This result suggests that the inclusion of glass and bricks in the whole index would not appreciably alter the pattern of construction activity as set forth in this publication. Bricks (at 40 yuan per 1,000 bricks) constitute 17%-21% of the total value of building materials in the construction sector. Production thus would have amounted to an estimated 45 billion to 50

Table 6

China: Comparison of the Present Index and Kang Chao's Index

1957 = 100

	Building Materials Index of this Publication	Kang Chao's Index of Inputs to Construction
1950	15	12
1951	22	21
1952	28	34
1953	53	53
1954	61	67
1955	65	72
1956	109	112
1957	100	100
1958	170	166

Table 7

China: Effect on Inclusion of Glass and Brick on the Construction Index

1957 = 100

	Index of this Publication[1]	Five-Item Index[2]
1949	10	10
1950	15	14
1951	22	19
1952	28	25
1953	53	45
1954	61	55
1955	65	62
1956	109	99
1957	100	100
1958	170	159
1959	183	172
1960	153	151

1. Based on cement, timber, and steel used in construction.
2. Based on cement, timber, steel, glass, and brick used in construction.

billion bricks in 1973--a not unreasonable figure, considering the production of 30 billion bricks reported for 1960. Glass (at 1.29 yuan per square meter) represents only about 1.5% of the total value of building materials, so that 1973 production would have been about 100 million square meters of flat glass. In 1960 the production of glass was 66.5 million square meters.

APPENDIX A

CHRONOLOGY OF CONSTRUCTION ACTIVITY 1949-73

1949-57: Rehabilitation and the First Five-Year Plan

During the reconstruction phase, construction activity was directed toward the rebuilding of the war-damaged industrial and transportation base. Rail lines were mended, damaged or idle factories were returned to production, and a small amount of new plant construction was initiated. With the adoption of the First Five-Year Plan (1953-57), industry was given top priority over other types of construction. Soviet building specifications were adopted, and Soviet technical assistance was provided. The main results were an increase in basic heavy industry and in the railroad network.

1958-60: The Great Leap Forward

The Chinese felt during the late 1950s that a much faster pace of development could be attained by adding massive inputs of labor to the construction process. This idea resulted in the Great Leap Forward, a period of forced draft development in which large inputs of labor were used in an attempt to overcome material limitations and to speed industrialization. In construction, continued work on the core Soviet-aid plants was accompanied by a rapid-pace program of building thousands of small iron furnaces, fertilizer plants, cement plants, and machine shops. Severe material shortages quickly developed, and quality of output plummeted. Industrial and construction problems were exacerbated by the harvest shortfalls. The combination of industrial collapse, severe food shortages, and the withdrawal of the Soviet advisers in mid-1960 brought the Leap Forward to an inglorious end.

1961-65: Readjustment and Recovery

The period of readjustment and recovery was characterized by a return to orthodox planning, including the shutting down of useless small plants. Construction work was first concentrated on major projects that could be finished quickly. Later, renewed investment was undertaken on a selective basis by the central government—featuring the chemical fertilizer, petroleum, and electronics industries. Vast military and related construction was initiated. China turned to the West as a primary source of modern technology and began to purchase substantial amounts of machinery and whole plants. A central theme of this period was the higher investment priority accorded to agriculture and industries supporting agriculture.

1966-69: The Cultural Revolution

The Cultural Revolution—in which Mao tried to rekindle the revolutionary spirit and chasten the apolitical bureaucracy—was a period mixed in its purposes and effects. The political turmoil disrupted the urban sector and led to material shortages and to delays in the national construction schedule. Some of the hurry-up philosophies of the Greap Leap Forward were reinstated, though on a much more moderate scale. Construction materials and funds were once more wasted on poorly conceived small-scale projects. Local decisions on investment were not coordinated with raw material supply or need for the output. The re-establishment of political order in 1969 was necessary for construction programs to be again pursued effectively. In general, the Cultural Revolution had little effect on agricultural production and only temporarily halted the upward trend of industry and construction.

1970-74: The Current Scene

Once the Cultural Revolution had faded, work moved forward rapidly on major projects in industry, transportation, and other sectors, and the small-plant program was pushed on a fairly rational basis. Small cement plants were built in great numbers, reaching 2,800 by 1973, with output equaling the output of the modern cement plants. Small fertilizer plants also were stressed, and their output is claimed to be greater than the modern plants. By 1973 the construction of small plants had once more outpaced the availability of construction materials and supporting inputs, such as fuels. Another re-examination of priorities among small plants has been in process, with the result that the level of small-plant construction has been drifting downward during the past year.

At the start of 1974, construction activity in the PRC reflects the revised investment priorities of late 1972 and

1973, under which Peking is attempting to bolster deficiencies in agricultural and industrial performance. Construction activity now features the buildup of electric power capacity, port and harbor improvements, capital improvements in the raw materials industry (mining), and industrial projects supporting agriculture. The PRC in 1973 contracted with Japan, the United States, and Western Europe for US $1.2 billion worth of industrial plants—mainly chemical fertilizer and artificial fiber plants—which will heavily color the construction scene in the late 1970s.

For the next two to five years, construction activity will feature industries producing chemical products, raw materials, and electric power. This activity will include the construction of the numerous foreign plants now under contract. Construction in the mining industry will give priority to opencut mining, a technology in which the PRC has much to learn from the West. Construction of major new facilities at international ports will parallel the rapid expansion of foreign trade. The steel industry will continue to have high priority in construction, with the major emphasis on capacity to produce finished steel. The petroleum industry has been speeding up its already fast pace. Development during the next few years will give top billing to oil pipelines and to the opening up of offshore deposits in the shallow Pohai Gulf.

APPENDIX B

SOURCES

The sources providing information for estimating the amounts used in construction and the price weights for the three building materials are noted below.

Cement

Chien-chu Ts'ai-liao Kung-yeh, no. 5, Peking, 7 Mar 1964, p. 2.

China News Service, Canton, 6 Feb 1965.

Ibid., 22 Feb 1965.

Foreign Broadcast Information Service, People's Republic of China, ccc-2, 31 Dec 1964.

Ibid., b-10, 3 Jan 1972.

Ibid., b-1, 1 Dec 1972.

Ibid., b-12, 27 Dec 1973.

Jen-min Jih-pao, Peking, 3 May 1964, p. 1.

Ibid., 29 Nov 1971, p. 4.

US Congress, Joint Economic Committee, People's Republic of China: An Economic Assessment, Washington, D.C., 1972. .

New China News Agency, various releases.

Peking Review, no. 2, 11 Jan 1974, p. 23.

BBC, Summary of World Broadcasts, FE/W707/A/13, 17 Jan 1973.

Ibid., FE/W241/B/28, 4 Dec 1963.

Survey of China Mainland Press, no. 2191, 1 Feb 1960, p. 8.

Ten Great Years: Statistics of the Economic and Cultural Achievements of the People's Republic of China, Peking, Foreign Languages Press, 1960.

Timber

In addition to the sources above, the following were used:

Kang Chao, The Construction Industry in Communist China, Aldine Publishing Co., Chicago, 1968.

Chi-hua Ching-chi (Planned Economy), no. 11, 1957, p. 22.

S.D. Richardson, Forestry in Communist China, Johns Hopkins University Press, Baltimore, 1966.

Steel

In addition to the sources for cement and timber, the following were used:

Foreign Broadcast Information Service, Far East, BBB-6, 20 Oct 1959.

Jen-min Jih-pao, Peking, 12 Feb 1962, p. 4.

Chi-hua Ching-chi (Planned Economy), no. 9, 1957, p. 13.

Yeh-chin Pao, no. 48, Peking, 4 Dec 1959, p. 37.

Wo-kuo Ti-i-ke Wu-nien-chi-hua-shih-chi Ti Sheng-tsan Ho Hsiao-fei Kuan-hsi, State Statistical Bureau, Peking, 1959, p. 69.

Price Weights

Except for the compendium of Shanghai prices published in 1958,* only fragmentary information on prices in China is available. The scattered references, often to individual products with inadequate specifications, have been gathered from a wide variety of newspapers, journals, and other sources. Most of the individual prices used in this publication are for 1957 and are, for the most part, ex-factory or wholesale prices. These price data have been weighted by estimates of the amounts used in construction, by type and grade, of each of the three building materials in order to derive the respective price weights.

* Academia Sinica, Shanghai Economic Research Institute, and Shanghai Academy of Social Science, Economic Research Institute, Shang-hai Chieh-fang Chien-hou Wu-chieh Tzu-liao Hui-pien 1921-1957 (A Compliation of Reference Materials of Shanghai Commodity Prices Before and After Liberation), Shanghai Jen-min Ch'u-pan-she, Shanghai, October 1958.